

CALL TEXT

CLIMATE SERVICES COLLABORATIVE RESEARCH ACTION ON CLIMATE PREDICTABILITY AND INTER-REGIONAL LINKAGES

(Drivers and mechanisms linking Poles & Monsoons for societal usefulness of climate services)

BACKGROUND AND RATIONALE

Climate Services aim at providing more reliable climate information for the near future (months to decades) relevant for local and regional users. Within this broad context, variability of polar and tropical systems affects a large proportion of the world population.

Extremes such as sub-seasonal breaks of monsoon rains up to decadal trends in rainfall intensity have a strong impact on water resources for agriculture, industry and water supply. In turn, global monsoon systems in Asia, Africa and Latin America also affect climate extremes in mid- and high-latitudes. Similarly, variability of polar vortexes plays a significant role on weather in mid-latitudes, and even on monsoon systems via teleconnection, including the stratosphere. Particular examples include the Pakistan flooding of 2010 and flooding in northern India in 2013 and 2014, both of which featured strong interactions between the mid-latitude flow and tropical monsoon behavior. Equivalent events could be found also in Africa (as 2010–11 Southern Africa floods), America (as 2005 Amazonian drought), or Eurasia (as 2013 Central Europe flooding or 2010 Russian wildfires).

Enhancing prediction capabilities of such phenomena as well as improving the usability of such climate knowledge to users would strongly benefit society. Risk management measures addressing immediate needs should be put in the context of systematic changes of these risks over time. In turn, insights on future climate conditions can be promoted by coupling them to present day experience of climate and weather anomalies.

Improving the usefulness (credibility, level of detail, tailoring for user needs) of climate projections deserves an enhanced attention. Timely, relevant and legitimate scientific knowledge is central for increasing the adaptive capacity and resilience of diverse users to the impact of climate variability and change. This is of particular importance in the context of low capacity but also central for developed and emerging countries as emphasized in the Global Framework for Climate Services¹, as well as in the new global platform Future Earth².

This call aims to contribute to the overall challenge of developing climate services with a focus on inter-regional linkages role in climate variability and predictability. Major impediments indeed still exist having efficient climate services at regional and local level, because of little or poorly understood climate processes (in part caused by a paucity of observations), inadequate dissemination of scientific

¹ <http://www.gfcs-climate.org/>

² <http://www.futureearth.info/>

knowledge, conflicts between climatic and non-climatic stressors and lack of action by decision makers and the human society at large.

CALL TOPICS

Projects should address **one or more** of the following topics:

Topic 1- Understanding past and current variability and trends of regional extremes

The utility of projections and scenarios will progress when their match with historic and recent observed variability and trends improves. Therefore this topic is devoted to:

- **Observation:** Place modes of large-scale sub-seasonal to decadal variability in a climatological context using historical and paleoclimate data and coupled Earth/climate system models for the past, present and future conditions,
- **Process:** Understanding drivers and mechanisms of observed large-scale variability and trends on sub-seasonal to decadal time scales and their regional representation (teleconnections, role of components such as cryosphere, ocean and/or stratosphere, orography, warming “hiatus” ...),
- **Evaluation:** Attribution of discrepancies between regional observations and historical simulations and hindcasts, to uncertainties in the variability of natural forcings and of, modelling uncertainties and/or internal variability.

Topic 2- Predictability and prediction skills for near-future variability and trends of regional extremes

Recent research programs have explored the possibility to generate more skilful decadal forecasts, focusing on initialization techniques, process studies and model system configurations. In many populated areas, outside the tropics for short-term El Niño Southern Oscillation (ENSO), such forecast skill is yet very unsatisfactory for supporting stakeholders’ decisions. Only some potential sources of predictability have been detected so far. Further exploration may improve prediction skill:

- **Exploration:** new regional model-based sub-seasonal/decadal prediction ensemble for the reliability of near-term projections for user-relevant spatial scales
- **Investigation:** impact of initializing coupled components of the sub-seasonal to decadal climate system other than the ocean (e.g. sea ice, land surface, vegetation, aerosols ...)
- **Assessment:** test different approaches to improve near-future estimates of variability and trends (e.g. model weighting approaches), benchmark realism of projections and initialized predictions using empirical statistical relationships.

Topic 3- Co-construction of near term forecast products with users

Enhancing adaptive capacity and resilience requires the integration of information on both climatic and non-climatic stressors. Translation and visualization of climate information for users should be

improved, users' representations of climatic issues should be better understood, and mutual trust should be developed. Although topics 1 and 2 above do address issues that are relevant for users, their utility needs to be progressed in order to fully benefit from new research results, with:

- **Trans-disciplinarity:** Co-construction development of processes to co-identify and co-develop the useful knowledge, based on near-term climate forecasts in sub-seasonal to decadal scale, required by a group of users (from public/private sectors or communities)
- **Investigation:** Bounds and limits of climate information and its uncertainties, derived from sub-seasonal, decadal climate models and observations, for integration by users within their current constraints, values and representations.

The development of **inter- and trans-disciplinary** collaborations is encouraged, especially for Topic-3, involving natural and **social scientists to work with various type of users**. Overall, an important target of this call is to **provide results that can serve at different spatial scales and can be easily transferrable** to emerging regional climate services.

Project requirement

Given the complexity and scope of these challenges and the potential benefits to be accrued from the outcomes of action oriented research under this call, a proposed project should exhibit that it requires **critical mass reachable only with international and regional coordination**. This call doesn't aim to fund activities that can be supported by national calls and intend to explore **additional sources** of funding for predictability, **understudied processes** or **transdisciplinary** approaches.

Development of research consortia supported by **at least three participating partner agencies with at least one outside of Europe** is a key criterion, addressing **one or more topics** above, with emphasis on vulnerable areas, pinpointed by the last IPCC report³ (e.g. regional climate influenced by Monsoon, Sub-tropical, Mediterranean or Arctic systems).

Consortium partners should identify a Leading Principal Investigator (LPI) for each proposal for application, management and communication purposes. The LPI is officially responsible for all communications with the Theme Program Office, including the submission proposal. These communications must be in accordance with the LPI's funding agency requirements.

Proposed studies are also encouraged to incorporate relevant research associated with socioeconomic implications of the resulting knowledge/information, risks and benefits analysis, and impediments to the **use of climate understanding in decision making**.

On an operative level, this call aims to be in line with the issue studied which is the evolution of the global climate. Hence consortia have to take into account **sustainability principles in research**: Consideration of projects' climate footprint and contributions to a climate-friendly research system,

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<http://www.ipcc.ch/report/ar5/>

e.g. in terms of (virtual) meetings, travels and energy use. It is recommended to use the existing documentation for guidance⁴.

This call aims to support **medium-size research project**, 3-4 years duration, and recommends budget from 1 to 3 M€. **See national annexes for specific constraints.**

All funded projects will attend kick-off, mid-term and end term meeting for **joint cross-viewing and dissemination.**

Timeline

The “Climate predictability and inter-regional linkages” CRA is envisioned as a two-stage Call. Proposers will be asked to submit a pre-proposal (~ 4 pages long) describing the project, the consortium and the tentative budget and, for the projects that will successfully go through stage 1, submission of the full proposal (~ 20 pages long) will follow. Here below is the timeline:

- 1st April 2015: Call for pre-proposals
- 1st June 2015: Call closes
- Mid-September 2015: Invite full proposals
- Mid-November 2015: Full proposals due
- End-January 2016: Panel for decision
- April-June 2016: Projects begin

How to apply

All call documents and the submission portal can be found at the Belmont Forum Grant Operations website: <https://bfgo.org/>.

⁴ <http://www.jpi-climate.eu/projects/2013callclimatefriendlyclimateresearch>